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EXAMINER	
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ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/675,415	BASAWAPATNA ET AL.	
	Examiner	Art Unit	
	Brian Shelton	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Action is in response to the Application filed 30 September 2003.

2. The Application has been examined. **Original claims 1-33** are pending.

The objections and rejections cited are as stated below:

Claim Objections

3. **Claims 1, 19 and 29** are objected to because of the following informalities:

In **claim 1**, lines 22-23 should be deleted because they are a duplicate of lines 24-25.

In **claim 19**, line 2, "cable mode" should be changed to --cable modem--.

In **claim 29**, at line 3, "the set-top box" should be changed to --a set-top box-- because no such element is disclosed in parent claim 28. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. **Claim12** is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In particular, claim 12 presents the limitation of "...wherein each interface unit does not include a microprocessor. Applicants, in the specification, disclose both an analog interface unit and a digital interface unit (see Application, dated 9/30/2003 (hereinafter "Application") at page 24, lines 5-10 and figs. 4 and 5). Further, Applicants' state that the digital and analog interface units "may include a microprocessor." (Application at page 33, lines 4-5).

Applicants' disclosure, though, describes both the digital and analog interface units in such a manner as to require a microprocessor element to perform the disclosed operations. To wit, Applicants' describe the digital interface units as including an IRD (Integrated Receiver Decoder) which "...can tune to the incoming video channel and then demodulate, demultiplex, and decode/decrypt it." (Application at page 32, lines 2-13).

Furthermore, Applicants disclose the analog interface unit as possessing the capability to receive an IR signal from a variety of different types of remote controllers and transmit a channel selection signal upstream (Application at page 25, line 20 – page 26, line 5). Also, the analog interface unit is described as possessing "sufficient processing" to command an IR blaster to tune a subscriber's television to a predetermined channel (Application at page 28, lines 3-13).

Applicants, though, fail to provide any disclosure to describe how these complex processes can occur without a microprocessor element to process and transmit signals, control other devices, and decode and demultiplex a digital signal. Finally, Applicants fail to set forth an alternate embodiment of the interface units that does not perform such processes as would necessitate the inclusion of a microprocessor element.

Accordingly, claim 12 is rejected under 35 U.S.C. 112, 1st paragraph as failing to comply with the enablement requirement because the limitation of claim 12 is not described in such a manner as to enable one of ordinary skill in the art to make or use the invention.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which

said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. **Claims 1, 4, 10, 13, 14, 15, 20, 21, 24, 25, 26, 27 and 33** are rejected under 35 U.S.C. 103(a) as being unpatentable over Utsumi et al (Utsumi), U.S. Patent No. 5,729,281 in view of Bigham et al. (Bigham), U.S. Patent No. 5,740,075).

Regarding **claim 1**, Utsumi discloses a cable distribution system (Fig. **2**; col. 7, lines 16-32), comprising:

a) a headend (Fig. **2**, Center Station **1**; col. 7, lines 18-29);

b) a plurality of service modules (Fig. **2**; Selective Distribution Station $\mathbf{10_1}$; see detail at Fig. **3**) associated with the headend, each service module receiving one or more of the multiplexed channel signals

from the headend and providing it to each of a plurality of frequency converters within each service module that each convert one of the video channels to a predetermined frequency (col. 7, line 33 – col. 8, line 2); and

c) a plurality of interface units (Fig. **2**, Subscriber Devices **71_1-71_N**) associated with each service module, there being one interface unit for each frequency converter of the service module, (col. 8, lines 11-15) each interface unit being located at a customer location, each interface unit receptive of one of the video channels converter to the predetermined frequency, the interface unit passing a video and an audio signal in the video channel to a video displaying apparatus (col. 8, lines 20-46).

Although Utsumi discloses a headend, Utsumi fails disclose the headend receptive of signals from a plurality of video sources, the headend including a plurality of tuner/receiver/decoders that are each controllable to tune/receive/decode a selected video channel and provide the video channel at a selected frequency, wherein certain ones of the video channels contain analog video and audio signals the video channels containing a plurality of digital and audio signals multiplexed together to create a digital multiplex, selected one of the plurality of video channels being multiplexed together by the headend to create one or more multiplexed channel signals, as claimed.

However, Bigham, in an analogous art, teaches a headend (Fig. **6**, VNH **2104**; col. 40, lines 12-26) which is receptive of signals from a plurality of video sources, wherein the headend includes a plurality of tuner/receiver/decoders that are each controllable to tune/receive/decode a selected video channel and provide the video channel at a selected frequency, wherein certain ones of the video channels contain analog video and audio signals (col. 40, line 37 – col. 41, line 33) and certain other ones of the video channels contain a plurality of digital video and audio signal multiplexed together to create a digital multiplex (col. 41, lines 34 – col. 43, line 48), selected ones of the plurality of video channels being multiplexed together by the headend to create one or more multiplexed signals (col. 43, lines 48-65) for the benefit of providing programming in analog format for legacy subscribers (i.e., subscribers capable of receiving analog programming only) and digital programming in higher quality and quantity to subscribers of digital cable (i.e., subscribers capable of receiving both the analog and digital signals) (see col. 27, lines 50-61).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the headend of Utsumi to incorporate the headend receptive of signals from a plurality of video sources, the headend including a plurality of tuner/receiver/decoders that are each controllable to tune/receive/decode a selected video channel and provide the video channel at a selected frequency, wherein certain

ones of the video channels contain analog video and audio signals the video channels containing a plurality of digital and audio signals multiplexed together to create a digital multiplex, selected one of the plurality of video channels being multiplexed together by the headend to create one or more multiplexed channel signals, as taught by Bigham, for the benefit of providing programming in analog format for legacy subscribers and digital programming in higher quality and quantity to subscribers of digital cable in a cable distribution system.

Although Utsumi discloses interface units that can receive and pass to the video displaying apparatus video channels containing analog audio and video signals with the tuning of the programming occurring at a service module outside of the subscriber premises, Bigham further teaches a mixed analog and digital distribution network including subscriber reception equipment (i.e., interface units) where certain customers receive basic, analog only service and other customers are capable of receiving and displaying both digital service and the basic analog programming (col. 27, lines 5-61). Providing a mixed analog and digital network with support for both legacy (i.e., analog only) subscribers and digital and analog subscribers, and the related subscriber reception equipment for the type of programming (i.e., analog only or analog and digital) to which the viewer subscribes, provides the typical and well-known benefit of decreased network deployment costs by utilizing less expensive subscriber reception equipment to subscribers who are not

paying for digital programming and providing more expensive digital and analog equipment to subscribers who are paying premium fees to receive both types of programming.

Accordingly, it would have been obvious to modify the interface units of Utsumi in view of Bigham to incorporate certain ones of the interface units can receive and decode both video channels containing a digital multiplex and video channels containing analog video and audio signals and certain other ones of the interface units can receive and pass to the video displaying apparatus video channels containing analog video and audio signals, but cannot decode and pass to the video displaying apparatus video channels containing a digital multiplex, as further taught by Bigham, for the benefit of decreased network deployment costs by utilizing less expensive subscriber reception equipment to subscribers who are not paying for digital programming and providing more expensive digital and analog equipment to subscribers who are paying premium fees to receive both types of programming in a cable distribution system.

As for **claim 4**, the teachings of Utsumi in view of Bigham are relied upon as discussed above. Bigham further teaches cabling running between the headend and each of a plurality of service modules having sufficient bandwidth capacity to be able to efficiently carry signals as high as 750 MHz (Fig. **6**, optical fiber **2156**; col. 43, lines 61-65, where fiber optic cabling transmitting signals from a headend inherently discloses

cabling having sufficient bandwidth capacity to carry signals as high as 750 MHz). Providing high bandwidth capacity cabling from a headend to service modules in a cable television system provides the typical and well-known benefit of allowing a higher magnitude of broadcast programming to be transmitted for selection by a viewer.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combined system of Utsumi in view of Bigham to incorporate cabling running between the headend and the plurality of service modules associated therewith, the cabling having sufficient bandwidth capacity to be able to efficiently carry signals at least as high as 750 MHz, as further taught by Bigham, for the benefit of allowing a higher magnitude of broadcast programming to be transmitted for selection by a viewer.

The limitation of **claim 10** is encompassed by the teachings of Utsumi in view of Bigham. Specifically, Utsumi discloses each of the frequency converters in each of the plurality of service modules is a programmable converter (Fig. **3**; modulating portions $\mathbf{13_1}$ to $\mathbf{13_N}$, see col. 7, lines 45-51; col. 8, lines 29-37).

The limitation of **claim 13** is encompassed by the teachings of Utsumi in view of Bigham. Specifically, Utsumi discloses each service

module utilizes the same predetermined frequencies as each other service module (col. 8, lines 11-13).

The limitation of **claim 14** is encompassed by the teachings of Utsumi in view of Bigham. Specifically, Utsumi discloses each tuner/receiver/decoder tunes, receives, and decodes a given video channel and that channel from that tuner/receiver/decoder can be displayed on every video displaying apparatus (col. 8, lines 20-46, where subscriber devices **71_1-71_N** can select a certain programming channel which can be displayed on receiving devices **31_1-31_N**).

The limitation of **claim 15** is encompassed by the teachings of Utsumi in view of Bigham. Specifically, Utsumi discloses the interface unit passes information back upstream to its associated service module that includes channel selection information (col. 8, lines 20-30).

As for **claim 20**, the teachings of Utsumi in view of Bigham are relied upon as discussed above relative to claim 1. Utsumi teaches cabling running between each service module and the plurality of interface units associated therewith, the cabling having a home run architecture (Fig. **1**; col. 5, line 60 – col. 6, line 1). A home run or "star" distribution network provides the typical and well-known benefit of enhanced reliability

of signal delivery where a disruption in one signal line does not disrupt the delivery of signals on the remaining lines.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was to modify the distribution network of Utsumi in view of Bigham to incorporate the cabling running between each service module and the plurality of interface units associated therewith, the cabling having a home run architecture, as taught by Utsumi, for the benefit of enhanced reliability of signal delivery where a disruption in one signal line does not disrupt the delivery of signals on the remaining lines in a cable distribution system.

The limitation of **claim 21** is encompassed by the teachings of Utsumi in view of Bigham. Specifically, Utsumi discloses cabling running between each service module and the plurality of interface units associated therewith, the cabling having a loop through architecture (Fig. **2**; col. 7, lines 16-24).

The limitation of **claim 24** is encompassed by the teachings of Utsumi in view of Bigham. Specifically, Bigham discloses the headend is a local headend (Fig. **6**; col. 40, lines 12-26).

As for **claim 25**, Bigham further teaches a regional headend located at a location remote from the local headend, the regional headend

providing video channels at selected frequencies to the local headend (Fig. **5**, Broadcast Consolidation System **2100**; col. 35, lines 32-36; col. 35, lines 44-54 and col. 38, lines 7-9) for the benefit of processing programming from video information providers prior to distributing the programming to regional headends (VNH's **2104**) (see col. 35, lines 32-43).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the cable distribution system of Utsumi in view of Bigham to incorporate a regional headend located at a location remote from the local headend, the regional headend providing video channels at selected frequencies to the local headend, as further taught by Bigham, for the benefit of processing programming from video information providers prior to distributing the programming to regional headends in a cable distribution network.

Regarding **claim 26**, Utsumi discloses a cable distribution system (Fig. **2**; col. 7, lines 16-32) comprising:

a) a headend (Fig. **2**, Center Station **1**; col. 7, lines 18-29);

b) a plurality of service modules (Fig. **2**; Selective Distribution Station $\mathbf{10_1}$; see detail at Fig. **3**) associated with the headend, each service module receiving one or more of the multiplexed channel signals from the headend and providing it to each of a plurality of frequency converters within each service module that each convert one of the

video channels to a predetermined frequency (col. 7, line 33 – col. 8, line 2); and

c) a plurality of interface units (Fig. **2**, Subscriber Devices **71_1-71_N**) associated with each service module, there being one interface unit for each frequency converter of the service module (col. 8, lines 11-15), each interface unit being located at a customer location, each interface unit receptive of one of the video channels converter to the predetermined frequency, the interface unit passing a video and an audio signal in the video channel to a video displaying apparatus (col. 8, lines 20-46).

Although Utsumi discloses a headend, Utsumi fails disclose the headend receptive of signals from a plurality of video sources, the headend including a plurality of tuner/receiver/decoders that are each controllable to tune/receive/decode a selected video channel and provide the video channel at a selected frequency, wherein certain ones of the video channels contain analog video and audio signals the video channels containing a plurality of digital and audio signals multiplexed together to create a digital multiplex, selected one of the plurality of video channels being multiplexed together by the headend to create one or more multiplexed channel signals, as claimed.

However, Bigham, in an analogous art, teaches a headend (Fig. **6**, VNH **2104**; col. 40, lines 12-26) which is receptive of signals from a plurality of video sources, wherein the headend includes a plurality of

tuner/receiver/decoders that are each controllable to tune/receive/decode a selected video channel and provide the video channel at a selected frequency, wherein certain ones of the video channels contain analog video and audio signals (col. 40, line 37 – col. 41, line 33) and certain other ones of the video channels contain a plurality of digital video and audio signal multiplexed together to create a digital multiplex (col. 41, lines 34 – col. 43, line 48), selected ones of the plurality of video channels being multiplexed together by the headend to create one or more multiplexed signals (col. 43, lines 48-65) for the benefit of providing programming in analog format for legacy subscribers (i.e., subscribers capable of receiving analog programming only) and digital programming in higher quality and quantity to subscribers of digital cable (i.e., subscribers capable of receiving both the analog and digital signals) (see col. 27, lines 50-61).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the headend of Utsumi to incorporate the headend receptive of signals from a plurality of video sources, the headend including a plurality of tuner/receiver/decoders that are each controllable to tune/receive/decode a selected video channel and provide the video channel at a selected frequency, wherein certain ones of the video channels contain analog video and audio signals the video channels containing a plurality of digital and audio signals multiplexed together to create a digital multiplex, selected one of the

plurality of video channels being multiplexed together by the headend to create one or more multiplexed channel signals, as taught by Bigham, for the benefit of providing programming in analog format for legacy subscribers and digital programming in higher quality and quantity to subscribers of digital cable in a cable distribution system.

As for **claim 27**, the teachings of Utsumi in view of Bigham are relied upon as discussed above. Although Utsumi discloses interface units that can receive and pass to the video displaying apparatus video channels containing analog audio and video signals with the tuning of the programming occurring at a service module outside of the subscriber premises, Bigham further teaches a mixed analog and digital distribution network including subscriber reception equipment (i.e., interface units) where certain customers receive basic, analog only service and other customers are capable of receiving and displaying both digital service and the basic analog programming (col. 27, lines 5-61). Providing a mixed analog and digital network with support for both legacy (i.e., analog only) subscribers and digital and analog subscribers, and the related subscriber reception equipment for the type of programming (i.e., analog only or analog and digital) to which the viewer subscribes, provides the typical and well-known benefit of decreased network deployment costs by utilizing less expensive subscriber reception equipment to subscribers who are not paying for digital programming and providing more expensive

digital and analog equipment to subscribers who are paying premium fees to receive both types of programming.

Accordingly, it would have been obvious to modify the interface units of Utsumi in view of Bigham to incorporate certain ones of the interface units can receive and decode both video channels containing a digital multiplex and video channels containing analog video and audio signals and certain other ones of the interface units can receive and pass to the video displaying apparatus video channels containing analog video and audio signals, but cannot decode and pass to the video displaying apparatus video channels containing a digital multiplex, as further taught by Bigham, for the benefit of decreased network deployment costs by utilizing less expensive subscriber reception equipment to subscribers who are not paying for digital programming and providing more expensive digital and analog equipment to subscribers who are paying premium fees to receive both types of programming in a cable distribution system.

Regarding **claim 33**, Utsumi discloses a cable distribution system (Fig. **2**; col. 7, lines 16-32) comprising:

a) a headend (Fig. **2**, Center Station **1**; col. 7, lines 18-29);

b) a plurality of service modules (Fig. **2**; Selective Distribution Station $\mathbf{10_1}$; see detail at Fig. **3**) associated with the headend, each service module receiving one or more of the multiplexed channel signals from the headend and providing it to each of a plurality of frequency

converters within each service module that each convert one of the plurality of the video channels to a predetermined frequency (col. 7, line 33 – col. 8, line 2);

c) a plurality of interface units (Fig. **2**, Subscriber Devices **71_1-71_N**) associated with each service module, there being one interface unit for each frequency converter of the service module (col. 8, lines 11-15), each interface unit being located at a customer location, each interface having a frequency converter that converts the frequency of the video channel received from the service module (col. 8, lines 20-46).

Although Utsumi discloses a headend, Utsumi fails disclose the headend receptive of signals from a plurality of video sources, the headend including a plurality of tuner/receiver/decoders that are each controllable to tune/receive/decode a selected video channel and provide the video channel at a selected frequency, wherein certain ones of the video channels contain analog video and audio signals the video channels containing a plurality of digital and audio signals multiplexed together to create a digital multiplex, selected one of the plurality of video channels being multiplexed together by the headend to create one or more multiplexed channel signals, as claimed.

However, Bigham, in an analogous art, teaches a headend (Fig. **6**, VNH **2104**; col. 40, lines 12-26) which is receptive of signals from a plurality of video sources, wherein the headend includes a plurality of

tuner/receiver/decoders that are each controllable to tune/receive/decode a selected video channel and provide the video channel at a selected frequency, wherein certain ones of the video channels contain analog video and audio signals (col. 40, line 37 – col. 41, line 33) and certain other ones of the video channels contain a plurality of digital video and audio signal multiplexed together to create a digital multiplex (col. 41, lines 34 – col. 43, line 48), selected ones of the plurality of video channels being multiplexed together by the headend to create one or more multiplexed signals (col. 43, lines 48-65) for the benefit of providing programming in analog format for legacy subscribers (i.e., subscribers capable of receiving analog programming only) and digital programming in higher quality and quantity to subscribers of digital cable (i.e., subscribers capable of receiving both the analog and digital signals) (see col. 27, lines 50-61).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the headend of Utsumi to incorporate the headend receptive of signals from a plurality of video sources, the headend including a plurality of tuner/receiver/decoders that are each controllable to tune/receive/decode a selected video channel and provide the video channel at a selected frequency, wherein certain ones of the video channels contain analog video and audio signals the video channels containing a plurality of digital and audio signals multiplexed together to create a digital multiplex, selected one of the

plurality of video channels being multiplexed together by the headend to create one or more multiplexed channel signals, as taught by Bigham, for the benefit of providing programming in analog format for legacy subscribers and digital programming in higher quality and quantity to subscribers of digital cable in a cable distribution system.

Bigham further teaches a set top box (Fig. **4**; Digital Entertainment Terminal **100a**) utilized in a mixed analog and digital cable distribution network utilized by subscribers to digital with analog service for receiving digital and analog programming and passing a video and audio signal in the video channel to a video displaying apparatus (col. 27, lines 50-61; col. 8, lines 42-50; col. 29, lines 31-37). Providing the functionality of a set top box for receiving and passing and passing video channels to a video displaying apparatus in association with an interface unit for selecting and converting a programming signal provides the typical and well-known benefit of increased signal processing and user interaction capabilities, such as decoding and demultiplexing of digital programming and electronic program guide functions.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the interface units of Utsumi in view of Bigham to incorporate a set-top box associated with at least one of the interface units, the set-top box being receptive of the video channel from the interface unit, the set-top box passing a video and audio signal in the video channel to a video displaying apparatus, as

further taught by Bigham, for the benefit of increased signal processing and user interaction capabilities, such as decoding and demultiplexing of digital programming and electronic program guide functions in a cable distribution system.

9. **Claims 2-3** are rejected under 35 U.S.C. 103(a) as being unpatentable over Utsumi et al (Utsumi), U.S. Patent No. 5,729,281 in view of Bigham et al. (Bigham), U.S. Patent No. 5,740,075), as applied to claim 1, further in view of Chen et al. (Chen), U.S. Patent No. 5,699,105.

As for **claim 2**, the teachings of Utsumi in view of Bigham are relied upon as discussed above. Although Utsumi discloses cabling running between each service module and the plurality of interface units, Utsumi in view of Bigham fails to specifically disclose the cabling being bandwidth limited so as to not efficiently carry signals appreciably above 350 MHz, as claimed.

However, Chen, in an analogous art, teaches coaxial cable links from service modules to interface units utilizing relatively narrow bandwidth cabling (e.g., a 5 to 50 MHz link) (col. 5, lines 9-26; col. 6, lines 1-9). The use of narrow bandwidth cabling, such as cabling of a lower grade, presents a greater signal attenuation to higher transmission frequencies, and thus provides the benefit of lower cost for implementation of a transmission network from a service module (i.e., node) to subscriber

premises where cabling capable of transmitted high bandwidth signals is not needed.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the cabling of Utsumi in view of Bigham to incorporate the cabling being bandwidth limited so as to not efficiently carry signals appreciably above 350 MHz, as taught by Chen, for the benefit of lower cost for implementation of a transmission network from a service module to subscriber premises when cabling capable of transmitting high bandwidth signals is not needed in a cable distribution system.

The limitation of **claim 3** is encompassed by the teachings of Utsumi in view of Bigham, further in view of Chen. Specifically, Chen teaches metallic coaxial cabling (col. 5, lines 9-26; col. 6, lines 1-9, where coaxial cable is inherently metallic in order to electrically conduct a signal).

10. **Claim 5** is rejected under 35 U.S.C. 103(a) as being unpatentable over Utsumi et al (Utsumi), U.S. Patent No. 5,729,281 in view of Bigham et al. (Bigham), U.S. Patent No. 5,740,075) as applied to claim 1, further in view of Rakib, U.S. Patent Publication No. US 2002/0019984 A1.

As for **claim 5**, the teachings of Utsumi in view of Bigham are relied upon as discussed above. The combination of Utsumi in view of Bigham

fails to disclose the headend including a block of Personal Video Recorders.

However, Rakib, in an analogous art, teaches a headend comprising a block of personal video recorders (Fig. **6**, Hard Disk Array **289**, see paragraphs 96-97) for the benefit of reduced consumer costs in the provision of TIVO like functions by utilizing hardware located at a headend (see paragraph 7).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the headend of Utsumi in view of Bigham to incorporate a block of personal video recorders, as taught by Rakib, for the benefit of reduced consumer costs in the provision of TIVO like functions by utilizing hardware located at a headend in a cable distribution system.

11. **Claim 6** is rejected under 35 U.S.C. 103(a) as being unpatentable over Utsumi et al (Utsumi), U.S. Patent No. 5,729,281 in view of Bigham et al. (Bigham), U.S. Patent No. 5,740,075) as applied to claim 1, further in view of Dunn et al. (Dunn), U.S. Patent No. 5,721,829.

As for **claim 6**, the teachings of Utsumi in view of Bigham are relied upon as discussed above relative to claim 1. The combination of Utsumi in view of Bigham fails to disclose the headend including a video on demand server, as claimed.

However, Dunn, in an analogous art teaches a headend including a video on demand server (Fig. **1**, Continuous Media Server **40**, col. 2, lines 40-50, col. 3, lines 13-19, col. 3, lines 43-63) for the benefit of allowing viewers to order video content and watch the content on their own time schedule (see col. 1, lines 63-67).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the headend of Utsumi in view of Bigham to incorporate a video on demand server, as taught by Dunn, for the benefit of allowing viewers to order video content and watch the content on their own time schedule in a cable distribution system.

12. **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Utsumi et al (Utsumi), U.S. Patent No. 5,729,281 in view of Bigham et al. (Bigham), U.S. Patent No. 5,740,075) as applied to claim 1, further in view of Fries, U.S. Patent No. 6,317,885.

As for **claim 7**, the teachings of Utsumi in view of Bigham are relied upon as discussed above relative to claim 1. The combination of Utsumi in view of Bigham fails to disclose the headend including a personal computer, as claimed.

However, Fries, in an analogous art, teaches a headend including a personal computer (Fig. **1**, Interactive Information Server **46** comprising

rack mounted personal computer; col. 3, line 66 – col. 4, line 28) for the benefit of providing an interactive entertainment and information system by receiving and storing data from content providers and inserting the data into a cable transmission (see col. 1, lines 65-67 and col. 4, lines 4-16).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the headend of Utsumi in view of Bigham to incorporate a personal computer, as taught by Fries, for the benefit of providing an interactive entertainment and information system by receiving and storing data from content providers and inserting the data into a cable transmission in a cable distribution system.

13. **Claims 8, 9, and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Utsumi et al (Utsumi), U.S. Patent No. 5,729,281 in view of Bigham et al. (Bigham), U.S. Patent No. 5,740,075) as applied to claim 1, further in view of Nikolich, U.S. Patent Publication No. US 2002/0073431 A1.

As for **claim 8**, Utsumi in view of Bigham fails to disclose the headend comprises a DOCSIS frequency converter, as claimed.

However, Nikolich, in an analogous art, teaches a DOCSIS frequency converter located at a headend (Fig. **1B**, Modulators **108-1** – **108-N**; paragraphs 27-28, describing frequency conversion of DOCSIS downstream data signals). Including DOCSIS frequency converters at a

cable headend provides the typical and well-known benefit of transmitting downstream internet data to subscribers in compliance with an accepted and widely used data transmission standard.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the headend of Utsumi in view of Bigham to incorporate the headend includes a DOCSIS frequency converter, as taught by Nikoloch, for the benefit of transmitting downstream internet data to subscribers in compliance with an accepted and widely utilized data transmission standard in a cable distribution system.

The limitation of **claim 9** is encompassed by the teachings of Utsumi in view of Bigham, further in view of Nikolich, as discussed above. Specifically, Utsumi discloses data transmitted in channels being converted for passage to the plurality of service modules and associated interface units col. 7, line 33 – col. 8, line 2). Nikolich teaches a DOCSIS frequency converter (paragraphs 27-28, where a converter for converting DOCSIS downstream data for transmission to subscriber equipment, inherently, by compliance with the DOCSIS standard, discloses DOCSIS forward channels for transmission of data).

As for **claim 19**, the teachings of Utsumi in view of Bigham are relied upon as discussed above relative to claim 1. Utsumi in view of

Bigham fails to disclose the headend includes a cable modem transmission system, as claimed.

However, Nikolich, in an analogous art, teaches a headend including a cable modem termination system (Fig. **1A**; Cable Modem Termination System **10**; paragraph 17) for the benefit of providing multiple downstream data channels with space savings in a single CMTS chassis (see paragraph 8).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the headend of Utsumi in view of Bigham to include a cable modem termination system (CMTS), as taught by Nikolich, for the benefit of providing multiple downstream data channels with space savings in a single CMTS chassis in a cable distribution system.

14. **Claim 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over Utsumi et al (Utsumi), U.S. Patent No. 5,729,281 in view of Bigham et al. (Bigham), U.S. Patent No. 5,740,075), as applied to claim 1, further in view of Ahmed et al. (Ahmed), U.S. Patent No. 6,519,773.

As for **claim 11**, the teachings of Utsumi in view of Bigham are relied upon as discussed above relative to claim 1. Although Utsumi discloses a plurality of frequency converters (modulating portions **13_1 to 13_N**) for producing a multiplexed downstream transmission containing a

plurality of user selected channels, the combination of Utsumi in view of Bigham fails to specifically disclose the frequency converters including a different bandpass filter, as claimed.

However, Ahmed, in an analogous art, teaches a plurality of frequency converters each including a different bandpass filter (Fig. **3B**, BPF **304A – 304N**; col. 7, line 45 – col. 8, line 19). A plurality of bandpass filters provides the typical and well-known benefit of blocking other frequencies not in a specified band in a frequency division multiplexing system comprising a plurality of distinct frequency bands.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the frequency converters of Utsumi in view of Bigham to incorporate a different bandpass filter associated with each frequency converter for the benefit of blocking other frequencies not in a specified band in a frequency division multiplexing system comprising a plurality of distinct frequency bands in a cable distribution system.

15. **Claim 12** is rejected under 35 U.S.C. 103(a) as being unpatentable over Utsumi et al (Utsumi), U.S. Patent No. 5,729,281 in view of Bigham et al. (Bigham), U.S. Patent No. 5,740,075) as applied to claim 1, further in view of DeRodeff et al. (DeRodeff), U.S. Patent No. 5,828,403.

As for **claim 12**, the teachings of Utsumi in view of Bigham are relied upon as discussed above relative to claim 1. Utsumi in view of Bigham fails to disclose each interface unit does not include a microprocessor.

However, DeRodeff, in an analogous art, teaches an interface unit that does not include a microprocessor (Fig. **1**, Remote Interface Units **18a** and **18b**; Fig. **6**, providing detail of Remote Interface Unit **18a**, comprising elements I-R I/F **74** and RF Modulator **76**; see Fig. **7**; col. 7, lines 17-28) for the benefit of providing an inexpensive interface between a user's television and a common set-top (i.e., service module).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the interface unit of Utsumi in view of Bigham to incorporate each interface unit does not include a microprocessor, as taught by DeRodeff, for the benefit of providing an inexpensive interface between a user's television and a service module in a cable distribution system.

16. **Claim 16** is rejected under 35 U.S.C. 103(a) as being unpatentable over Utsumi et al (Utsumi), U.S. Patent No. 5,729,281 in view of Bigham et al. (Bigham), U.S. Patent No. 5,740,075), as applied to claim 15, further in view of Chen et al. (Chen), U.S. Patent No. 5,699,105, further in view of Fellows, et al., "DOCSIS Cable Modem Technology," IEEE Communications Magazine, March 2001, Vol. 39, Issue 3, pp. 202-209 (ISSN: 0163-6804) (Fellows).

As for **claim 16**, the teachings of Utsumi in view of Bigham are relied upon as discussed above relative to claim 15. Utsumi in view of Bigham fails to disclose the information passed back upstream to the service module also includes a DOCSIS return channel that is passed by the service module back to the headend and back to an internet service provider, as claimed.

However, Chen, in an analogous art, teaches passing information back upstream to a service module including data transmissions which are further passed to a headend for communication with an internet service provider for the benefit of providing access to internet based services over a cable network (col. 5, lines 38-41).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the upstream information of Utsumi in view of Bigham to incorporate passing information upstream to the service module that is passed by the service module to the headend and back to an internet service provider, as taught by Chen, for the benefit of providing access to internet based services over a cable network in a cable distribution network.

Although Chen teaches transmitting upstream data via a service module to a headend for communication with an internet service provider, Utsumi in view of Bigham, further in view of Chen fails to specifically

disclose the upstream information including a DOCSIS return channel, as claimed.

However, Fellows, in an analogous art, teaches transmitting upstream information comprising a DOCSIS return channel (page 204, 2nd col., paragraphs 2-3). Utilizing a DOCSIS return channel in upstream data communications in a cable network provides the typical and well-known benefit of complying with an established data transmission standard and allows for the use of standardized data transceiver devices (e.g., customer cable modems and headend cable modem termination system equipment).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the upstream information of Utsumi in view of Bigham further in view of Chen to incorporate upstream information including a DOCSIS return channel, as taught by Fellows, for the benefit of complying with an established data transmission standard and facilitating the use of standardized data transceiver devices in a cable distribution system.

17. **Claims 17-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Utsumi et al (Utsumi), U.S. Patent No. 5,729,281 in view of Bigham et al. (Bigham), U.S. Patent No. 5,740,075) as applied to claim 1, further in view of Kitamura et al. (Kitamura), U.S. Patent No. 6,188,871.

As for **claim 17**, the teachings of Utsumi in view of Bigham are relied upon as discussed above. Although Utsumi discloses a processor being functional to control the operation of the receivers (Fig. **3**, Controlling Portion **17**), the combination of Utsumi in view of Bigham fails to disclose the processor and an associated database in communication with the headend and service module, and the database assisting the processor in this functionality and in storing customer viewing preferences.

However, Kitamura, in an analogous art, teaches a processor (Fig. **3**, CPU **904**) and database (Fig. **3**, Database **111**) in communication with a headend and service module, the processor controlling the operation of receiver/decoders and the database assisting the processor and storing customer viewing preferences (col. 8, lines 4-9, col. 8, lines 34-51) for the benefit of enabling a subscriber to receive a desired CATV program through a simple receiver (see col. 1, line 65 – col. 2, line 7).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the processor of Utsumi in view of Bigham to incorporate the processor and an associated database in communication with the headend and service module, and the database assisting the processor in this functionality and in storing customer viewing preferences, as taught by Kitamura, for the benefit of enabling a subscriber to receive a desired CATV program through a simple receiver in a cable distribution system.

As for **claim 18**, the teachings of Utsumi in view of Bigham are relied upon as discussed above. Although Utsumi discloses a processor being functional to control the operation of the receivers (Fig. **3**, Controlling Portion **17**), the combination of Utsumi in view of Bigham fails to disclose the local service module will only convert a selected video channel to a predetermined output frequency associated with a particular interface unit if that interface unit is authorized to receive that selected channel, as claimed.

However, Kitamura, in an analogous art teaches a local service module which only converts a selected video channel to a predetermined output frequency associated with a particular interface unit if the interface unit is authorized to view the program (Fig. **7**, Steps **1-4**, see col. 8, lines 34-63). Verifying whether a viewer is entitled to view a program prior to transmitting a program provides the typical and well-known benefit of increasing operator revenues through offering restricted access to premium content for increased subscription fees.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the local service module of Utsumi in view of Bigham to incorporate the only converting a selected video channel to the predetermined output frequency associated with a particular interface unit if that interface unit is authorized to receive the selected video channel, as taught by Kitamura, for the benefit of increasing operator revenues through offering restricted access to

premium content for increased subscription fees in a cable distribution system.

18. **Claim 22** is rejected under 35 U.S.C. 103(a) as being unpatentable over Utsumi et al (Utsumi), U.S. Patent No. 5,729,281 in view of Bigham et al. (Bigham), U.S. Patent No. 5,740,075) as applied to claim 1, further in view of Wunderlich et al. (Wunderlich), U.S. Patent No. 5,631,693.

As for **claim 22**, although Utsumi discloses cabling running between each service module and the plurality of interface units associated therewith (col. 7, lines 16-24), the combination of Utsumi in view of Bigham fails to disclose the cabling having a tree and branch architecture, as claimed.

However, Wunderlich, in an analogous art, teaches cabling having a tree and branch architecture (Fig. **1**; col. 5, lines 15-24; col. 5, lines 50-61) for the benefit of providing a convenient single point to multipoint distribution network (see col. 5, lines 58-61).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the cabling of Utsumi in view of Bigham to incorporate the cabling having a tree and branch architecture, as taught by Wunderlich, for the benefit of providing a convenient single point to multipoint distribution network in a cable distribution system.

19. **Claim 23** is rejected under 35 U.S.C. 103(a) as being unpatentable over Utsumi et al (Utsumi), U.S. Patent No. 5,729,281 in view of Bigham et al. (Bigham), U.S. Patent No. 5,740,075) as applied to claim 1, further in view of McGowan et al. (McGowan), U.S. Patent Publication No. US 2003/0018745 A1.

As for **claim 23**, the teachings of Utsumi in view of Bigham are relied upon as discussed above. Although Bigham discloses MPEG encoded digital CATV signals, the combination of Utsumi in view of Bigham fails to specifically disclose video channels including MPEG-4 encoded information, as claimed.

However, McGowan, in an analogous art, teaches video channels including MPEG-4 encoded information (paragraph 30) for the benefits of enhanced compression rates of video content and interactive content functionality (see paragraph 30).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the video channels of Utsumi in view of Bigham to incorporate MPEG-4 encoded information, as taught by McGowan, for the benefits of enhanced compression rates of video content and interactive content functionality in a cable distribution system.

20. **Claims 28-29 and 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Utsumi et al (Utsumi), U.S. Patent No. 5,729,281 in view of Bigham et al. (Bigham), U.S. Patent No. 5,740,075) as applied to claim 26, further in view of Decker et al. (Decker), U.S. Patent No. 6,009,465.

As for **claim 28**, the teachings of Utsumi in view of Bigham are relied upon, as discussed above. Utsumi in view of Bigham fails to disclose the video channels have been spectrally inverter prior to passage to the interface unit.

However, Decker, in an analogous art, teaches spectrally inverting video channels prior to transmission to an interface unit (col. 4, lines 59-63, describing spectral inversion performed by Channel Modulators **135** of headend (Fig. **2**); col. 7, lines 16-31, describing reception and subsequent unscrambling of video channels by First Converter **124** of Converter Box **110** (Fig. **3**)) for the benefit of scrambling programming data transmitted from a headend to viewer equipment to prevent unauthorized viewing.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the video channels of Utsumi in view of Bigham to incorporate the video channels have been spectrally inverted prior to passage to the interface unit, as taught by Decker, for the benefit of scrambling programming data transmitted from a headend to viewer equipment to prevent unauthorized viewing in a cable distribution system.

The limitation of **claim 29** is encompassed by the teachings of Utsumi in view of Bigham, further in view of Decker, as discussed above. Specifically, Decker teaches the interface units spectrally inverts the received video channel to restore the original audio and video signal orientation before sending a set top box (col. 7, lines 16-31, describing reception and subsequent unscrambling of video channels by First Converter **124** of Converter Box **110** (Fig. **3**)).

The limitation of **claim 31** is encompassed by the teachings of Utsumi in view of Bigham, further in view of Decker, as discussed above. Specifically, Decker discloses the spectral inversion is performed at the headend (col. 4, lines 59-63, describing spectral inversion performed by Channel Modulators **135** of headend (Fig. **2**)).

21. **Claim 30** is rejected under 35 U.S.C. 103(a) as being unpatentable over Utsumi et al (Utsumi), U.S. Patent No. 5,729,281 in view of Bigham et al. (Bigham), U.S. Patent No. 5,740,075) further in view of Decker et al. (Decker), U.S. Patent No. 6,009,465, as applied to claim 29, further in view of Shekel et al. (Shekel), U.S. Patent No. 3,639,840.

As for **claim 30**, Utsumi in view of Bigham, further in view of Decker, fails to disclose the interface unit includes a high side LO frequency converter, as claimed.

However, Shekel, in an analogous art, teaches an interface unit which includes a high side LO frequency converter (Fig. **5**, Fixed Frequency Oscillator **84**; col. 5, lines 18-43) for the benefit of down-converting a cable television signal to a standard output channel for display on a user's television (see col. 5, lines 38-42).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the interface unit of Utsumi in view of Bigham, further in view of Decker, to incorporate a high side LO frequency converter, as taught by Shekel, for the benefit of down-converting a cable television signal to a standard output channel for display on a user's television in a cable distribution system.

22. **Claim 32** is rejected under 35 U.S.C. 103(a) as being unpatentable over Utsumi et al (Utsumi), U.S. Patent No. 5,729,281 in view of Bigham et al. (Bigham), U.S. Patent No. 5,740,075), further in view of Decker et al. (Decker), U.S. Patent No. 6,009,465, as applied to claim 28, further in view of Hoarty et al. (Hoarty), U.S. Patent No. 5,220,420.

As for **claim 32**, the teachings of Utsumi in view of Bigham, further in view of Decker, further in view of Hoarty are relied upon as discussed

above. Although Decker teaches scrambling programming for transmission by spectral inversion of the video signals, Utsumi in view of Bigham, further in view of Decker fails to specifically disclose the spectral inversion being performed at the service module, as claimed.

However, Hoarty, in an analogous art, teaches scrambling programming signals which is performed at a cable system node (i.e., service module) (col. 19, lines 49-68) for the benefit of preventing unauthorized access of signals distributed by a intermediate network unit, such as a node or service module (see col. 19, line 49-51).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the spectral inversion scrambling of Utsumi in view of Bigham, further in view of Decker, to incorporate the spectral inversion being performed at the service module, as taught by Hoarty, for the benefit of preventing unauthorized access of signals distributed by an intermediate network unit in a cable distribution system.

Conclusion

23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

den Toonder, U.S. Patent No. 4,135,157 discloses a cable television system wherein a plurality of converters are located in a

common housing remote from subscriber premises and programming for a particular subscriber is delivered by operation of one of the RF converters following selection of the particular channel at the subscriber location (whole document).

Kim, U.S. Patent No. 6,305,021 discloses a television comprising analog and digital broadcast signal processors to allow viewing of both analog programming and digital programming on a single display device (abstract, col. 2, line 35 – col. 6; col. 6, lines 5-29).

Rao et al. (Rao), U.S. Patent No. 6,738,983 discloses a cable network architecture wherein a tuning command is transmitted by a subscriber to one or more intermediate interfaces, where, further, the intermediate interface (pedestal) selects and tunes the desired programming for delivery to the subscriber (whole document).

Nortel Networks, "Nortel Networks Cable Modem Termination System 1000," November 1998, pp. 1-6 (available at http://www.mercury.com.ar/pdf/nortel/CMTS%201000%20Datasheet.pdf), discloses a cable modem termination system comprising an integrated upconverter for delivering data to subscribers of a cable network in compliance with the DOCSIS format (pages 1-3).

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25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Shelton whose telephone number is (703) 305-8714. The examiner can normally be reached on Monday-Friday, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Grant can be reached on (703) 305-4755. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Brian Shelton
Examiner
Art Unit 2611

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